INSTASCAPE

Employing Social Media To Connect The Physical And Cultural Environment in Duluth's Downtown Waterfront

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INSTASCAPE: Employing Social Media To Connect The Physical And Cultural Environment in Duluth's Downtown Waterfront

A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University

By

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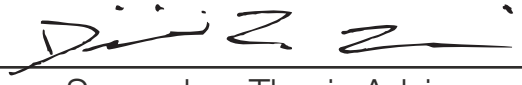
In Partial Fulfillment of the Requirements
for the Degree of
Bachelor of Landscape Architecture

Primary Thesis Advisor

Secondary Thesis Advisor



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May 2018
Fargo, North Dakota

THESIS ARCHIVAL NOTE

The following thesis project, entitled INSTASCAPE: Employing Social Media To Connect The Physical And Cultural Environment in Duluth's Downtown Waterfront, was composed over the course of the 2017-2018 academic school year. The Thesis Program, as contained here, was initiated and completed in the fall semester as a part of the LA 563: Programming and Thesis Preparation course. Supplemental material, including the Thesis Boards and the Thesis Presentation documents, were generated in the spring semester as a part of the LA 572: Design Thesis studio. Any inconsistencies between the different documents, in terms of research and design, should be excused per the evolution of the project across the two semesters.

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ABSTRACT

Eisenhower's great uniting Interstate Highway System may have brought many communities closer to each other, but in many instances, severed them internally. We see this problem in the city of Duluth, Minnesota. The central business district of Duluth, formally known as downtown, finds itself lacking strong connection to the tourist district, known as Canal Park, despite close proximity to the area. This is due notably to Interstate 35 running right through the border of the two neighborhoods. In this thesis, I will study more pedestrian-permeable alternatives to interstate highways for handling traffic in urban areas in order to find an alternative that isn't as severing and allows for the formation of a singular urban core.

1 The Narrative of the Theoretical Aspect of the Thesis

Can removing interstates and large highways in urban areas help create better-connected cities? This is a question which I would like to address in regards to Duluth, Minnesota. Duluth is a city near and dear to my heart. I have fond memories of visiting the town, and lived there this past summer. Any great city ought to make its residents want to take care of it, and so is the case with me and Duluth. The main problem I hope to address has to deal with what I feel is a planning error on the part of the city in regards to its two main districts; more-so the connectivity between them. The two core districts of the city are the tourist district, known as Canal Park, and the financial district, known as Downtown Duluth. At present, the two, while directly bordering each other, are very difficult to navigate between due to Interstate 35 running through the shared border of the two. As one could surmise, the interstate hasn't always been there, and the two neighborhoods were once seamlessly connected. I think looking back at how the areas were once laid out will be important in assessing how to stitch them back together.

As far as a solution to this problem goes, I would look into the problems and benefits of removing the interstate after it reaches a certain point into town using ramps and exits to disperse the traffic amongst existing and new one-ways and avenues. The removal of the interstate would create a two block wide stretch of land which could be re-purposed for public and private development. The removal of the interstate would create a two-block wide stretch of land which could be re-purposed for public and private development.

One of the main reasons for me wanting to work on this problem is purely anecdotal. At present, there is one main crossing point for cars and pedestrians alike, and it heavily favors vehicular traffic, making it dangerous at times to use the crossing. There have been many instances in which I have struggled to make it across this bridge without getting myself crushed by an oncoming truck or pegged by someone driving a little too fast. Making it safer and easier for pedestrians to traverse this corridor is at the forefront of my concerns, but I have other reasonings in addition to this one.

At present, many businesses downtown struggle to attract customers. Canal Park has no shortage of them. Another goal for the potential outcomes of this project is to get more of Canal Park's customers into the downtown district. This would become much easier if there were safe/easy pedestrian routes connecting the two. The project would also need a fair deal of traffic engineering. Duluth at present has a great system of one-ways downtown which are rarely at capacity. Additionally, the majority of drivers on I-35 have exited by the Canal Park exit,, thus it's extension beyond that point is unnecessary and only benefits those looking to get through town quickly at the expense of locals and tourists.

How can the two neighborhoods be better connected in a manner which doesn't impede the flow of traffic? There has been much research done pointing to the positive impact of creating walkable cities. This project will not question this research, but will elaborate upon it as the basis for recommending improvements to the cities walkability. Research questions

include How many pedestrians are in the area? How many accidents occur in the specified area? Do interstates help or hinder traffic in urban areas? What alternatives are there to large highways? Can the traffic load be spread over several streets? How are large highways bridged in other cities? Overall, the goal of the project would be to find alternatives/resolutions to the issues caused by the implementation of the interstate system in urban areas in order to create an urban fabric which values pedestrians as much if not more than motor vehicles.
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2 Project Typology

This project will exist within the realm of Landscape Architecture, and specifically Urban Design. It will focus predominantly on the creation of typological designations for urban blocks with specific focus on the design of various streetscapes (which will work to replace the traffic needs of the city which are currently handled by Interstate 35 and associated interchanges). There may also be some potential for developing open spaces and recreation networks, depending on what the research ends up recommending as far as the form of the area goes.

3 The Typological Research

The first project I decided to look into is the redevelopment of the Embarcadero in San Francisco, CA. This project is very similar to my thesis topic in that it deals with the removal of a highway corridor in order to connect a city's urban core with its waterfront district, and for the better.

For the better part of the three decades leading up to 1989, the Embarcadero Highway loomed large along the bayfront coast of San Francisco, creating a large wall of concrete bridges that allowed for easy access up the shore of the city at the expense of the city's connection to it's bay. At the time, the bayfront consisted mostly of warehouses, piers, and other undesirable structures; this helped in gaining support for the project in its initial phases, but not everyone was interested. The highway, initially intended to extend all the way up the shore to the Golden Gate Bridge, was met with much backlash. This backlash led to the project only extending a short way along it's initial route, with the rest to be completed at a later time when public opinions shifted in favor of the project. Well, these opinions never shifted, and in fact went further in the opposite

direction. In 1989, the Loma Prieta earthquake stuck, crumbling much of the city's critical infrastructure, with the Embarcadero Freeway included. At this point, the city officials had a choice: spend a fair amount of money on rehabilitating the project, or tear it all down and start from scratch with something new. With public opinions strongly leaning away from an expensive retrofit, the city opted to redevelop the freeway as an at-grade boulevard. This boulevard, consisting of two lanes paralleling a boulevard containing a streetcar line and rows of palms, was certainly much more pleasing as far as aesthetics go, but what affect did it have on the surrounding neighborhood?

In Robert Cervero's report entitled "From elevated freeways to surface boulevards: neighborhood and housing price impacts in San Francisco," we find some of the results that this change in urban form created. The report used the neigh-

borhood bordering the Embarcadero and a roughly comparable control neighborhood which wasn't near the Embarcadero. The results showed a noticeable economic impact on the area. "From 1990 to 2000 there was a 54% increase in the number of housing units in the impact area (from 3552 to 5462 units) versus a 31% increase in the comparison area (from 3827 to 5011 units)." Additionally, "The number of jobs in the impact zone jumped 23% from 1990 to 2005 compared with a 5.5% rise in the comparison zone." These numbers show quite matter-of-factly that the removal of the freeway had significantly encouraged development along the city's waterfront. Additionally, a huge amount of money was being poured into developing this area, with a few key projects leading the renewal. These include Pier One, The Ferry Building, AT&T Park, and the entirety of the free space left by the removal of the Embarcadero Freeways large ramp system which became the now prosperous South Of Market Avenue (SOMA) neighborhood.

It appears safe to say that the freeway removal along the embarcadero created positive impacts along its length and throughout the entire city, but San Francisco and Duluth are incredibly different, aren't they? I will take a moment here to highlight some of the similarities and dissimilarities between the two cities. For starters, both projects deal with the removal of urban highways disconnecting their respective city's urban core from the city's waterfront district. Each city's

initial plans for the creation of their respective interstates were met with much controversy and dissatisfaction. Both were initially stopped short of their final destination due to said public dissatisfaction. As far as differences go, there is a fairly significant difference in the population of the cities, and thus, the amount of traffic each highway handles. Also, the odds of an earthquake causing significant damage to Duluth's existing infrastructure are quite slim, so it will take more of a public push to make a project like this happen.

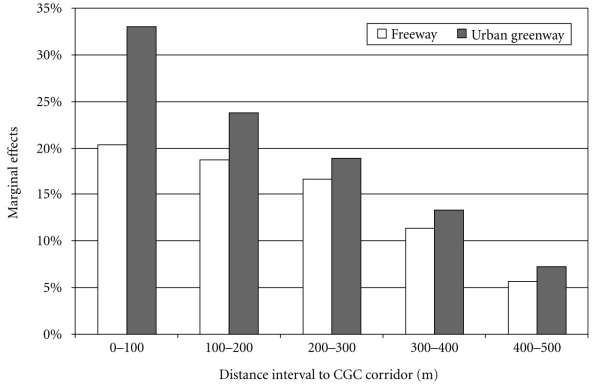
The next case I decided to analyze is the Cheong Gye Cheon elevated freeway in Seoul, Korea. In this case, the freeway was not replaced with a boulevard, but instead, a creek surrounded by park space, and provides an interesting alternative to San Francisco's Embarcadero.

The Cheong Gye Cheon Creek was once a central element of the Seoul neighborhood within which it ran. This creek was a place for people to gather, do laundry, and relax. As time went on, poor waste management practices turned the creek into an uninhabitable trickle. As such, the city opted to pave it over and run a freeway over it. The freeway rapidly became an important component of the city's transportation network, and carried a large volume of traffic in and out of the city each day. By the 2000s, a combination of shifting public perceptions, a new progressive mayor, and deteriorating steel plates ended up leading to the demolition of this highway as a method of reinvigorating

Seoul's urban core. The replacement? A rehabilitated Cheong Gye Cheon Creek. The traffic burden carried by the freeway was placed on a revamped bus-transit system along the route of the freeway.

A study done by aimed to assess the affect that this project had on the city. After doing significant measurements dealing with land value, customer counts, income, revenue, and other factors, the study showed much the same results as the Embarcadero in San Francisco showed, notably that while freeways benefit non-residential developments, the creation of an urban amenity benefited these areas and residential ones even more. They study hypothesized that this was due to expected increase in white collar residents, white collar jobs, and service industries who found these people as their target customer base.

The conclusions of this study show that replacing urban freeways with urban amenities can go a long way to give the surrounding area a boost economically. The research showed that, while access to outside sources of economic viability may be limited by this move, it led to the development of desired populations natively, which created a much more sustainable customer base for businesses. This was do in part by the fact that people more and more are putting higher preference to being in a neighborhood that has everything they need (nice housing, jobs, amenities) over one that is connected to these things via a long trip on the freeway. This balance of live/work/play is well understood and will only become more in demand as millennials take on the workplace.



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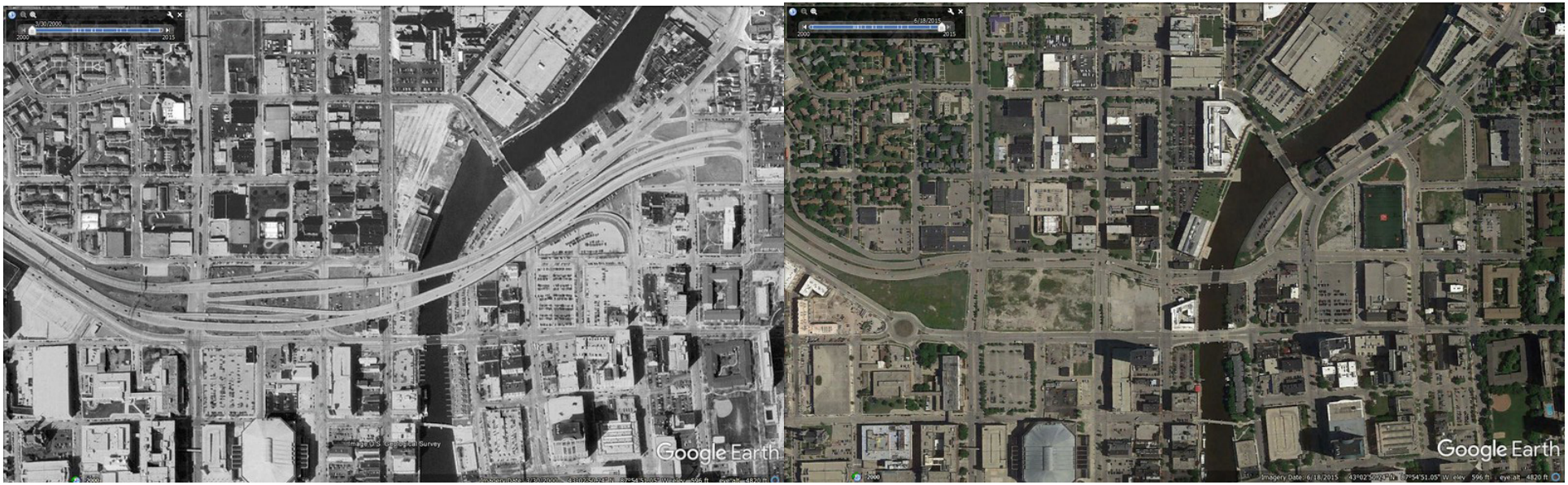
The Park East Freeway in Milwaukee, Wisconsin was developed to give vehicular traffic an easy way into downtown Milwaukee. From a socio-economic perspective, this city is the most akin to Duluth. The freeway, created in the late 60s and early 70s, was another case of a project which faced opposition from the very beginning. It seemed that there was a large group of people all across the United States who were calling for more scrutiny when it came to the development of the interstate network after seeing how the earlier branches had destroyed entire neighborhoods. This opposition ended up ending the Park East Freeway's building before it reached the final extension that the original design had called for. This was also the case of the Embarcadero Freeway in San Francisco.

The demise of the Park East Freeway was different than that of the other two case studies. Notably in that the condition of the freeway at the time of it's demolition was in good shape. This case shows the power that political forces can have over the development of cities, as the newly elected mayor had run on a campaign promise to remove the freeway if he was elected. Surely enough, after his election, the wheels of change started turning and down came the freeway. In this instance, the land opened up by the freeway was developed into what became part of Milwaukee's revitalized downtown, again offering



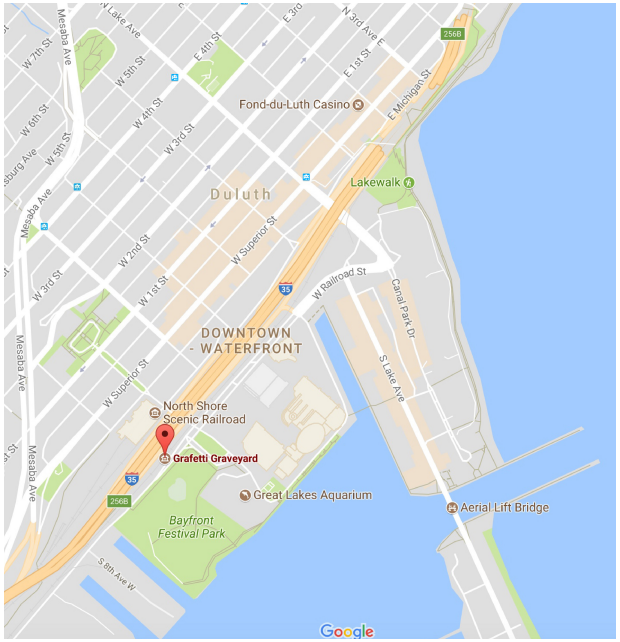
yet another alternative. Additionally, a traffic study noted that the freeway was designed for a much larger traffic count than what actually existed. This, I feel, is the case in Duluth as well, though research will reveal whether or not this is actually true.

Throughout these studies, we find two things that seem to be required in order for freeway removal projects to be successful: pressure from local populations, and structural deficiency within the interstate itself. A recent article in the Duluth News Tribune entitled “Plans in the works to redesign, reconstruct I-35 ‘Can of Worms’ in Duluth,” seems to suggest that the infrastructure of I-35 is reaching its breaking point, and as such it is the perfect time to implement the project I am proposing. Takeaways from these studies show that in many instances, there is no wrong or right way to go about using the land which remains, though they show a few options for what to do. One - turn the interstate into a well landscaped boulevard complete with well programmed public spaces and mass transit. Two - convert the interstate into an ecological restoration project which results in an urban amenity. Three- develop the newly freed up space into an extension of the city’s urban core. Naturally I will ask the question; why can’t we have all three? Overall, the conclusions of these studies seem to verify the theoretical premise of this project. Removing interstates in urban areas can create measurable improvements in the lives of those within the city as well as the life of the city itself.

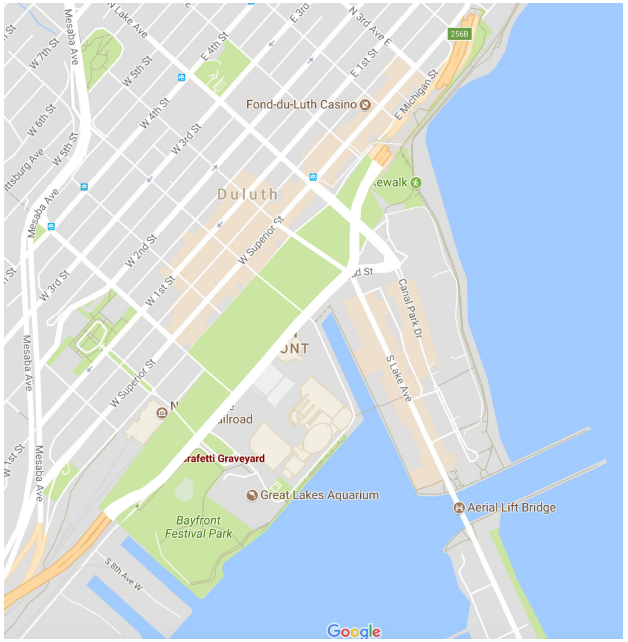
3 Major Elements

The major elements of the project would deal predominantly with creating and assigning typological components to various streets and blocks. We can see in the figure below the large amount of space which would be open to development in the following hypothetical situation.

One of the major components of the project would be laying out a traffic network which is capable of handling the city's traffic needs. This layout would need to consist of some sort of arterial boulevard which would replace the traffic handling of Interstate 35. Ideally, this traffic could be directed into an expanded version of a pre-existing street. In the case above, we see what it could look like if the interstate merged into Railroad Street. This option would be ideal, as it runs close to the waterfront and would bring users close to what is the primary destination for those using the interstate - the Canal Park neighborhood. Additionally, the removal of the interstate would allow for more of a continuity in the street layout between Canal Park and Downtown. This would be notably beneficial as it would allow Lake Ave and Canal Park Drive to extend into the downtown grid, thus alleviating



traffic at the intersections currently being used to bottleneck all the traffic onto the existing highway overpass. While the arterial boulevard mentioned previously would deal primarily with vehicular traffic, these streets would be much more pedestrian/bicycle friendly. This would aid in getting more of the customer base of Canal Park into the businesses of Downtown. As one can see, the project leaves a fair amount of open space to be developed where the interstate currently exists. This space I imagine would be best used for two purposes. One - create a sense of continuity in the built environment in downtown to visually and economically link the



two neighborhoods. Two - use the space to create a "crown jewel" park for Duluth's downtown neighborhood. While Duluth has a significant amount of green space, there are not many parks in the "formal" style. This park will link up existing green space along the shore east of downtown with Bayfront Festival Park on the west end. Another potentially challenging component that will need to be addressed will be the existing North Shore Scenic Railroad which runs along the current interstate. This railroad, while having a minimal amount traffic running on it, is an important feature in the city and will need to be accommodated.

4 User/Client Description

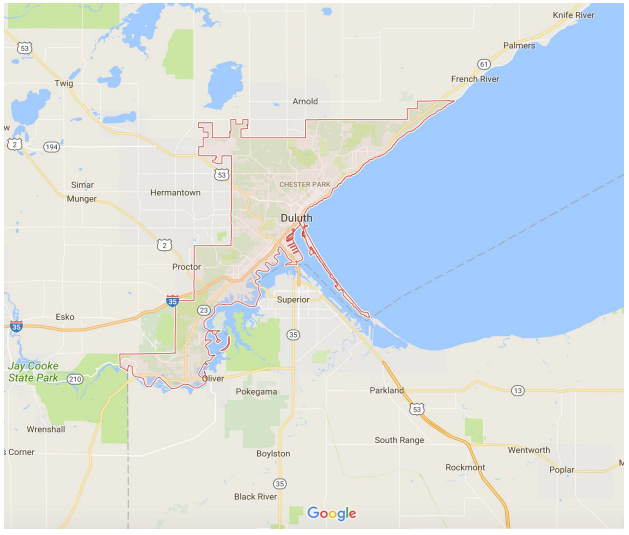
Being that this is predominantly a public project, the clients will consist of those affiliated with the city of Duluth. Overall, the site will be busiest during the day, peaking between 11 AM and 5 PM, with more the majority of visits during summer/fall when tourism is at its peak. Ownership will be divided between private developers (in the built part of the site) and city ownership (in the part which will become a park). The area will encourage the development of a live/work/play environment in the downtown neighborhood. I will break down the users of the site as follows: residents of the city, workers in the city, and tourists.

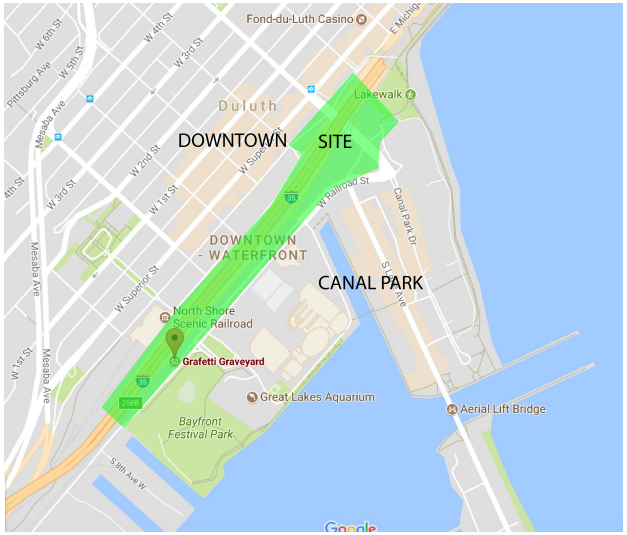
For residents of the city, specifically residents of downtown, this development will provide much to be desired. Firstly, the privately developed land will contain mixed use developement, thus increasing the amount of residential space in a highly sought after area. The streets will encourage walkability, so that residents will be within blocks of many amenities, notably Lake Superior. The park will be another addition to the city's sprawling park system, with connections to the lakewalk, this park will become networked into the existing system. The linear nature of the park will allow for fairly extensive trails and other amenities to be programmed within its boundaries.

For workers, the development will provide ample outdoor space for the sake of breaks and other outdoor purposes. The lack of interstate in the area will create a stronger visual and physical connection to the lake, which studies show has a positive psychological benefit, provided the building developed take advantage of these views with large windows.

For tourists, this development will slow down their experience of Duluth. Instead of just going from point A to point B, the people will experience the city (at least for a few blocks). The typical tourist itinerary involves going to Canal Park to watch the large ships come and go, and then wandering off into the neighborhood to find food and shop. With the interstate no longer acting as a constraint to this neighborhood, the tourists may find themselves walking farther into the city, hopefully bringing new energy into the downtown neighborhood.

5 Project Site





My site lies along a linear strip of land along the Lake Superior shore in Duluth, MN. I chose this site specifically because I have firsthand experience with it. My main call to action came as I found myself trying to traverse the overpass which connects the Downtown and Canal Park neighborhoods, during which I was nearly hit by a car twice. I personally find that the current route that people are taking to traverse these two neighborhoods is unsafe, and I think changing it could benefit the city beyond just safety. The site highlighted on the left runs from where Mesaba Avenue and Superior Street branch off of Interstate 35 to where the interstate enters into a tunnel which runs under various parks. This tunnel, as well as the park on top of it, work well to create connections along the east side of the shore and the east side of downtown, which in my opinion is doing significantly better economically than the businesses on its west side. The northern and southern boundaries of the site are determined by existing frontage roads which run along the highway.

The site was once partially developed, notably along Michigan Street which was home to many now-demolished buildings. The remainder of the site was home to a large rail yard. During the early years of the city, the waterfront was incredibly industrialized. Canal Park was no exception, being home to many warehouses and slum villages. The rail yard which separated downtown from Canal Park and the lakeshore wasn't seen as a problem as these areas weren't seen as valuable. When plans came to build Interstate 35, Canal Park still wasn't the tourist attraction it was today, and so the associated infrastructure reflects that. The traffic in this neighborhood is incredibly difficult to traverse, especially on tourist-heavy days. This problem can be rapidly compounded by the aerial lift bridge, which can rise for up to half an hour while ships pass beneath. This completely strangles traffic coming and going to Park Point, the neighborhood lying on the far side of the canal, which is built upon one of the longest sandbars in the world.

6 Project Emphasis

The primary emphasis of this project is finding alternatives to large impassable highways in urban areas, notably in Duluth, Minnesota. When it comes to the well being of urban environments, large highways are supposed to act as feeder tubes, bringing in “nutrients” in the form of people. In this case, and many others, the highway is doing more damage than it is providing for growth. As we have seen in the case studies, there are many instances in which removing these highways has actually increased growth and decreased traffic. At the least, I think it is important to show that when it comes to urban highways, there are alternatives.

For the longest time, we have been planning our cities for automobiles, but I feel that this age is ending. While it is hard to negate the benefits that urban freeways have brought to cities, it is equally hard to negate their negatives. They are large slabs of unsightly concrete which extend through neighborhoods via “divide and conquer”, leaving strange islands of land, ruining view corridors, and separating once connected areas.

The attitudes of the city dweller are changing. There is less and less

value being found in vehicular mobility. Instead, today’s city dweller looks for places within walking distance. Trails they can bike to work on. Urban amenities. Arts. Entertainment. Etc. With this, we need to rethink how we can go

about retrofitting our cities sprawl-informed layouts. The success of our cities in future generations depends on it.

In addition to the primary emphasis of the project, secondary emphasis will be placed on things such as stormwater treatment, urban landscapes, making ecological connections, and retrofitting structures left behind by the interstate.

It may seem atypical for Landscape Architects to take up projects in traffic engineering, but there are some precedents. In fact, Duluth's Interstate 35 is one of them. During the initial design phases of the interstate, the project was proposed to run over the lake itself on a series of concrete piers and breakwaters. This plan would have completely eclipsed views of the lake and restricted access to the lakeshore considerably. Fortunately, the Citizens for Integration of Highways and the Environment stepped in and called for an alternative. This group, as it happens, was founded by Kent Worley, a local landscape architect at the time. Worley went on to advise much of the route that I-35 took as it traveled along the shore past downtown, being one of the key reasons that it ended up being tunneled under the shoreline. Thankfully he and many other people across the city had the foresight to protect the lake, even when the amenities the city has now weren't even in place. I see this project not as an opposition to this design, but as an extension of it. There has been time to assess the project, and it seems that there is still some work to be done.

7 Goals For The Thesis Project

For the sake of addressing the goals in a brief and concise manner, I will go over them in list format. These are the project goals:

1. Find a successful alternative to the urban freeway.

As the case studies have shown, it is possible to remove large urban freeways with little to no adverse effects on commute times and traffic congestion. What exactly will this look like? There are many forms it could take. Perhaps a series of one ways, a boulevard, an interchange spreading the traffic amongst existing streets. While it seems unlikely to be viable, perhaps the option of taking the freeway underground could be considered. Perhaps more likely is the chance of building over the existing freeway to create a faux burial of the freeway. One way or another, there ought to be an alternative to the existing freeway.

2. Unite the neighborhoods of Canal Park and downtown Duluth to create an urban core.

At present, Duluth has three areas which compete for economic dominance within the town. Two of these (Downtown and Canal Park) exist within close proximity while the third (Miller Hill Mall area) is a fair distance out into the suburbs. By combining the first two into one cohesive district (Historic District?) it would be mutually beneficial for the two of them. It could stimulate growth and revitalization within the bounds of the district and give the town a more rounded off central core as opposed to its current stretched form.

3. Increase walkability within said urban core.

The idea for this thesis came from a personal account of poor walkability within the area addressed. As such, ensuring easy walkability in important to this project. The economic benefits mentioned previously will not work if it isn't easy to walk throughout the urban core.

4. Increase bikeability within said urban core.

As far as I know biking infrastructure is rather limited in the downtown/Canal Park area. The lakewalk has a designated bike trail, and there recently was a bike lane installed on Michigan Street downtown. That is about the extent of it. At a minimum the two ought to be connected. I will develop a bike network throughout this urban core to encourage transportation via bicycle around the core and beyond.

5. Assign space for mixed use development.

Again, one of predominant themes in creating successful cities for modern times has to do with striking that ideal mix of live/work/play, and this can't be done without the live and work components. I'm not sure what the current availability of housing is in the downtown area, but I know historically Duluth has had the type of downtown that people work in but do not live in. I think changing this is important to creating a vibrant urban core. While there isn't a whole lot of space available simply by removing the interstate, I think focusing on filling in the blocks which were awkwardly cut up will provide enough space for a reasonable amount of development.

6. Assign space for a central park.

When I say central, I mean it in that it will be in the center of the city. I imagine it being more akin to Central Park, NYC as well. Duluth has an incredible parks system which I have enjoyed firsthand, but the majority of its parks consist of large land preserves, and are a little bit more on the low side of programing. This park would be more formal in style, and would serve those living and visiting the urban core.

7. Connect said park to existing parks.

Additionally, this park would need to be connected to existing parks. There are two parks, each on the opposite terminus of the defined site, specifically. This park would create a seamless stretch of green space which would serve as the cartilage between Downtown and Canal Park.

8. Connect said park to existing trail networks.

As far as trail networks go, the only one within the specified area is the lakewalk, though the lakewalk is the busiest pedestrian thoroughfare in town. Incorporating it into the landscape of the site is important. I could see an alternate route extending through the park, offering a shortcut to users looking for a quick way through the Canal Park area without having to deal with all the tourists at the terminus of the actual canal. This trail could then also serve as the connection between the lakewalk and the previously mentioned Michigan Ave. bike lane.

9. Increase land values in the downtown area.

How far do good ideas go if they don't have any capacity to make someone money? Considering a significant investment by the city would be required for a project like this to happen, they ought to have some kind of return. Ensuring the quality of the project is enough to increase land values, and thus, tax revenues will be an important component of the project.

10. Bridge ecological gaps.

It will be important to find if the interstate has blocked more than just the mobility of people. How were local animal and plant populations affected by the interstates integration? Can we undo any of this damage?

11. Handle stormwater from on site and uphill.

Downtown Duluth's topography is significant in that it lies along the slant of a very large hill. This park could serve as a catch basin for stormwater as it makes its way down the hill, slowing it down and cleaning it before it reaches Lake Superior. The quality of the water within Lake Superior has been growing questionable as of late; the project ought to do what it can to curtail its impact.

8 Plan For Proceeding

Definition of a Research Direction

It is important to acknowledge what I don't know before I can start knowing more. That being said, here are some questions which still need to be answered:

What are the consequences of taking a stretch of interstate and turning it into a city-maintained road?

Is there any funding available for projects of this nature?

What are the city ordinances and codes that are relevant to this project?

How many people travel through the design area on a daily/monthly basis?

What is the history of the site?

What is the history of the development of I-35?

Have there been any projects proposing changes of this nature previously? What was their fate?

9 Results from Theoretical Premise/Unifying Idea Research

The research I am currently undertaking has to do with the analysis of location-based social network (LBSN) data in order to answer the questions integral to creating sound design decisions in urban environments. At present, designers go to great lengths in order to obtain people's opinions regarding place. Fortunately, in this day and age, the people proclaim their hopes and fears en masse to the public forum under the guise of the internet. It's time we start listening.

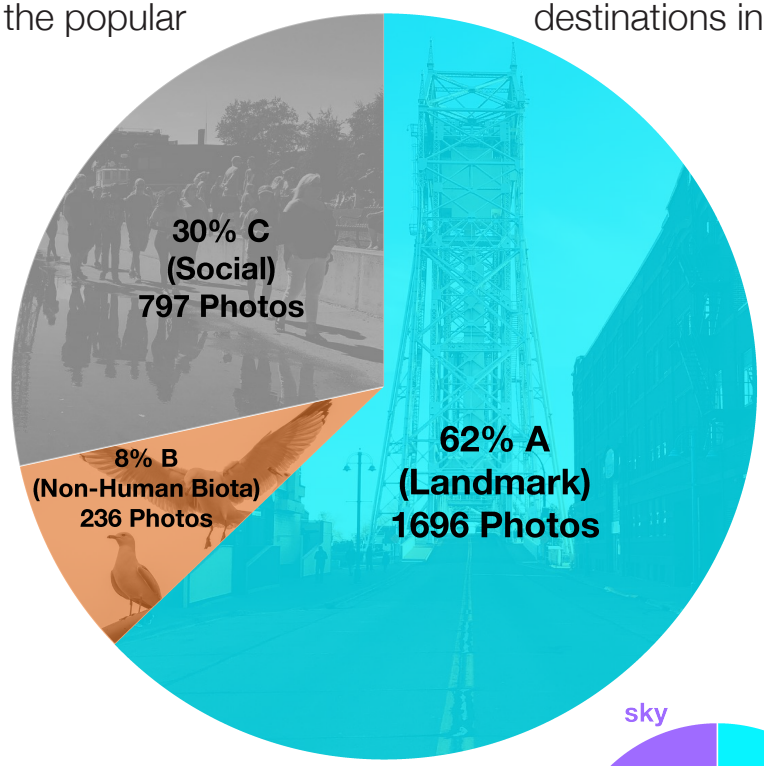
The methodology includes the downloading thousands of images geotagged in proximity to the site of the proposed design intervention in Duluth, Minnesota over the span of a year. Over 30 locations across the Downtown and Canal Park neighborhoods have been selected for this project, and the downloading is taking place at this very moment (it requires running a time-consuming program to accumulate all the images, so it takes a fair amount of time). These images paint a raw picture of personal impressions and user preferences, but interpreting this picture is something that, to my knowledge, has not yet been done in the field of landscape architecture.

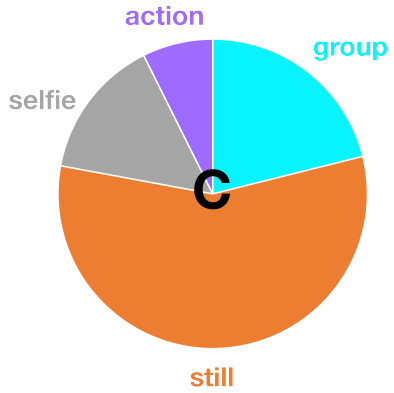
Once all the images have been downloaded, they then undergo another time-consuming process. All of these images will need to be sorted. I have created four classifications: landmark (A), non-human biota (B), social (C), and not useful (D). The research will focus specifically on the first three. Each of these classifications will then be sorted further into sub-classifications. Under landmark: bridge, building, maritime, monument, art, object. Under non-human biota: landscape, sky, lake, plant material, wildlife, geology. Under social: selfie, still, group, action. These categorization can at times be difficult to make, as there is some overlap. Generally, the subject of the photo is considered the categorization. For example; a photo of a seagull with the lake in the background. This would be categorized as wildlife, not lake. These sub-categorizations allow for more specific photo pools to be analyzed.

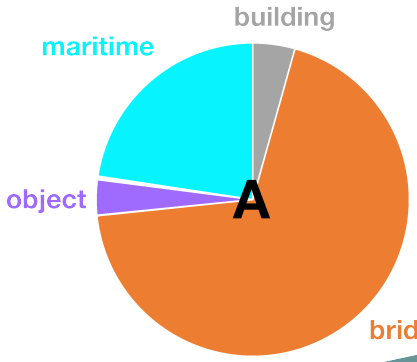
At this point, we have enough information to start analyzing data. In addition to downloading the image, the image comes with some other information. There are more solid facts, such as date taken, user, URL, number of likes, and there is implied data, such as location taken, photo content, field of view, etc. The latter requires some human resources to obtain. These attributes can then be analyzed to discover patterns, trends, materials, nodes, routes, preferences, relationships, and much more. Within theses social networks lies the collective consciousness of the people. If we use this to our advantage, we can create great design.

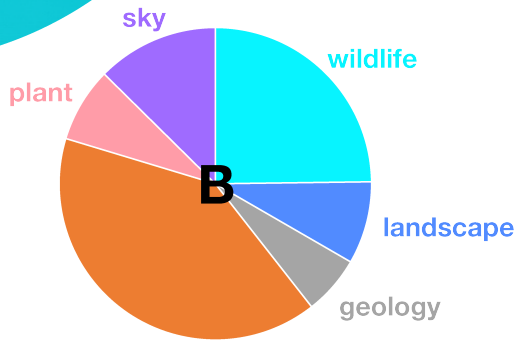

AERIAL
LIFT
BRIDGE

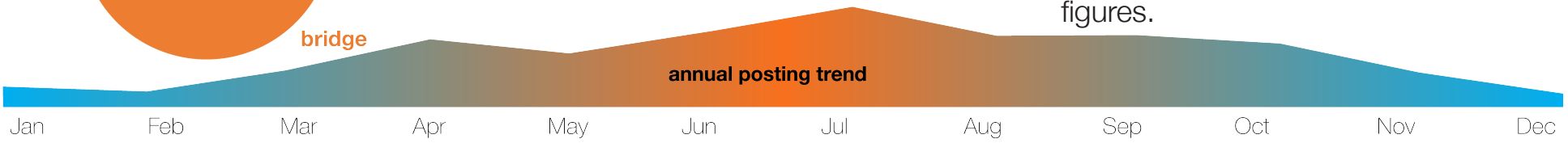
Due to the time consuming nature of this project, I have not yet been able to come to any final conclusions regarding my research. I have, however, begun to visualize some of the data that is being created. Patterns have already begun to emerge. Take for example what the numbers are saying for one of the popular destinations in Duluth, the Aerial Lift Bridge.





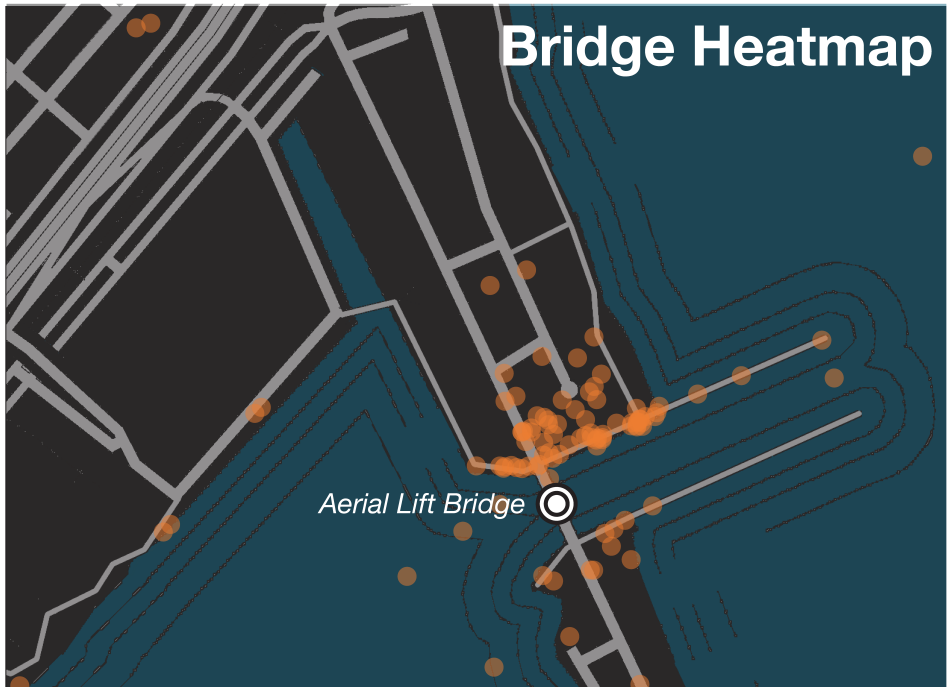


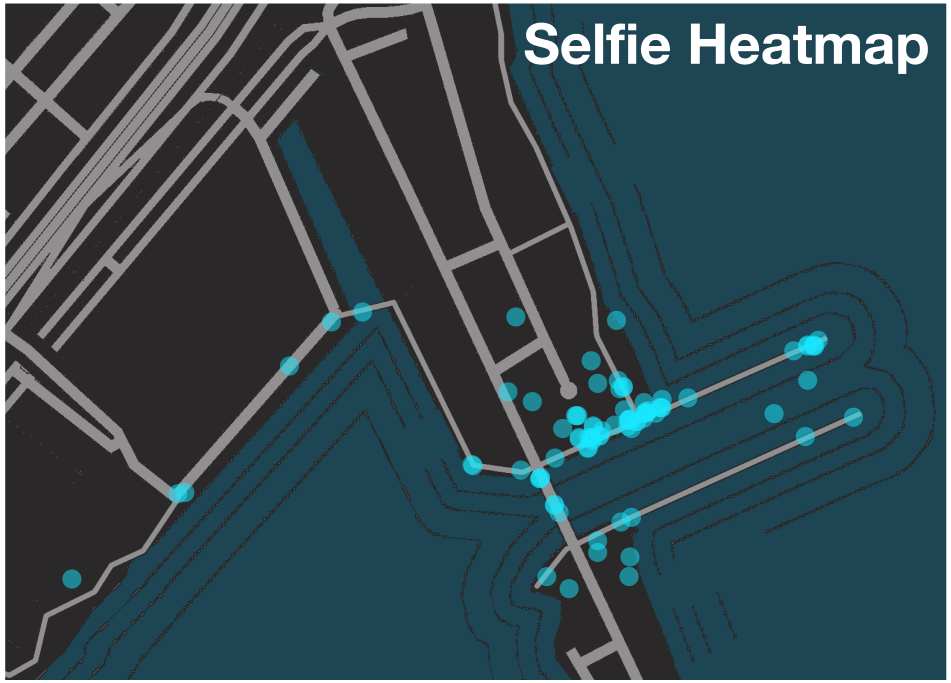




For this location, we notice a significant increase in the number of users on the site during the summer months, with use peaking in July. Users then dissipate at a steady pace until picking back up again after February. This change is likely driven by climactic factors, notably that Duluth in the winter is not a warm place to be. Additionally, the presence of ships, the major draw to this location, is negatively impacted by the icing of the lake, which also is at its thickest right when the number of posts drops to its lowest point.

Breaking down the posts into the previously mentioned categories and sub-categories was no easy task. This site alone returned 2,656 images which took over 5 hours to sort through. At the end of the initial breakdown, 1,696 photos fell into group A (landmark), 797 fell into group C (social), and 236 fell into group B (non-human biota). This is expected considering the location specified is itself a landmark. Further breakdown by sub-category can be seen in the figures.





There is also great opportunity to use this information for creating heat maps of user activity. Using a random sampling of 100 photos from the sub-categories “bridge” and “selfie”, maps were made showing where each of the posts were taken from. Where many posts overlap, we see brighter colors, representing areas of higher traffic where important views are likely. On the bridge heatmap, we see that users predominantly choose to take photos on the north side of the canal, with preference to three spots. Under the bridge, outside of the maritime center, and where the lakewalk meets up with the canal pier. On the selfie map, we notice similar trends, only instead of talking images under the bridge, they opt for at the end of the pier at the location of the lighthouse.

Using all of the images downloaded thus far and run through a photo mosaic creator, we can start to pick out a color palette true to the site. While this image doesn’t contain every photo from the study, it represents what is possible once they have all been obtained.

10 Project Justification

Firstly, on a personal level, Duluth is a place that I care about deeply. It is a city of immense natural beauty, and given the opportunity to benefit this community, I am going to take it. Simple as that. Improving walkability and sense of place within an urban area has been shown in many instances to have positive economic and social outcomes. I would like to bring these outcomes to Duluth.

On a much broader sense, the methods of landscape analysis being developed within this project have much greater ramifications for the field as a whole, as well as several other fields. It creates a whole new way of discovering public opinion. More on that in the next section.

Overall, this project is as close to ideal for me as I can get. It has a photography component. It is in a city I deeply care about. It exists to provide exciting new methods for designing for the hard to define public body.

11 Historical, Social, & Cultural Context of Thesis

The project being undertaken is not unique in its typology, but is very original in its methodology. As far as I am aware, it will be the first landscape architecture project to be developed from research obtained from location-based social network data. Regardless, many events have taken place leading up to making this design possible, and I will outline them here.

In 1939, the first instance of building a park on top of a freeway took place in Manhattan. The Franklin D. Roosevelt Expressway was ground breaking, without breaking the ground at the surface. The highway tunneled under the existing mayor's house and allowed for the creation of the 14 acre Carl Shurz Park above it. This allowed for the city's waterfront to become a public amenity without inhibiting an important transportation network, and provided precedent for many projects to come.

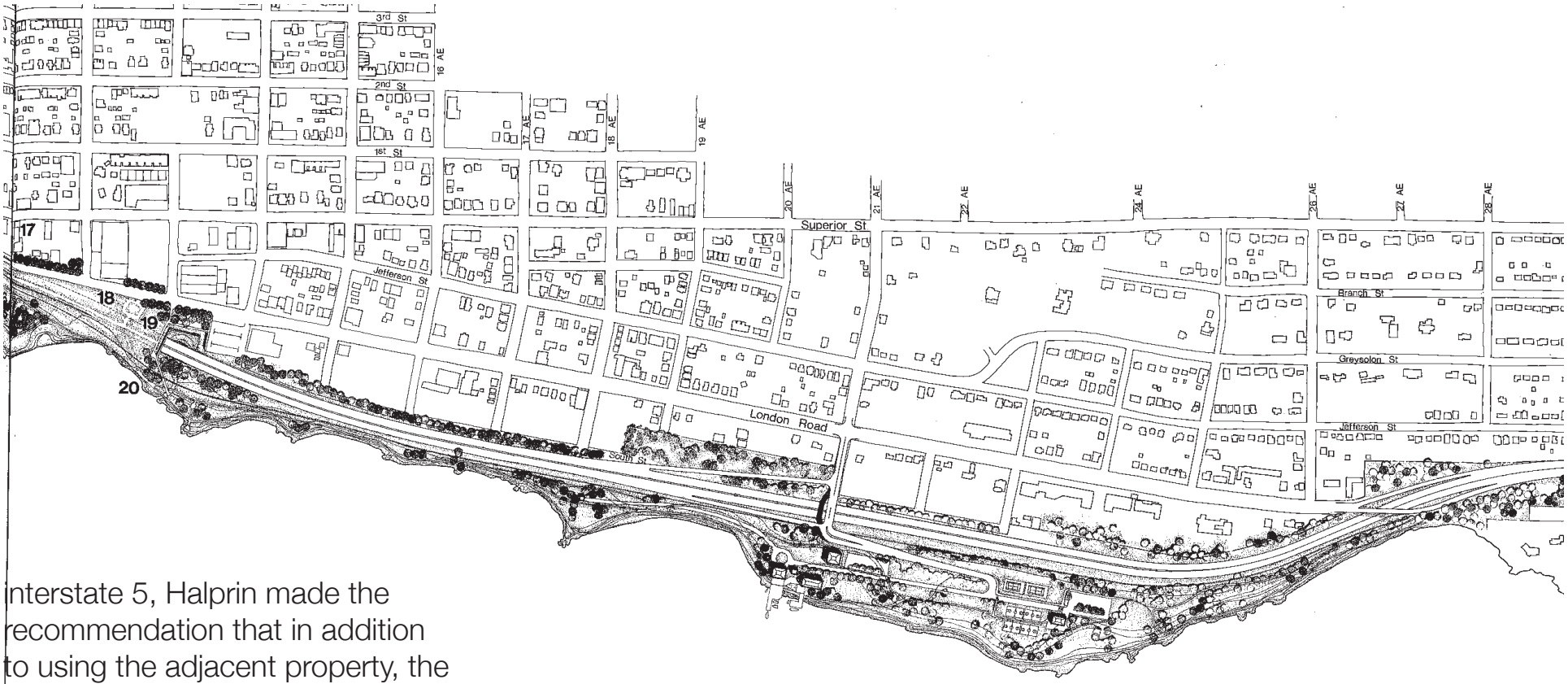
Unfortunately, this project didn't convince every city planner across the nation to bury their highways. According to Peter Harnik's *Benefitting From a Cover Up: How Concealing Urban Highways Can Create Parkland*,"The Interstate Highway System, when it was originally conceived in the early 1950s, was designed to link but not penetrate cities. By the 1960s, however, the distinction had been forgotten. Highways became the preeminent tool of urban renewal and redesign, and vast swaths of urban real estate were paved over. Waterfronts were blockaded in Portland, Cincinnati, Hartford, Cleveland, Philadelphia, and San Francisco. Nooses of concrete were wound tightly around the downtowns of Dallas and Charlotte. Trenches of noise and smog cut through Boston, Detroit, Seattle, and Atlanta. Stupendous elevated structures threw shadows over Miami and New Orleans. And wide strips

of land were taken from large, iconic parks in Los Angeles (Griffith Park), St. Louis (Forest Park), Baltimore (Druid Hill Park), and San Diego (Balboa Park)."

Similar thinking led to the creation of Interstate 35 as it runs through the city of Duluth. Initial plans for the interstate actually called for it bridging over Lake Superior itself, running along the shoreline on a series of piers. Fortunately, the residents of Duluth recognized the importance of being able to access their lakefront, and after much back and forth, settled on a compromise which called for the interstate running through a more interior route in the city. This route replaced an existing rail yard which once lied between Downtown and Canal Park. At the time, Canal Park was still playing true to its industrial roots, so the people of the city didn't see the potential adverse affects of cutting it off from their downtown via the interstate. However, as the route continued along the north shore, this compromise called for the interstate to be decked over, allowing for the creation of Lake Place Park on top.

Meanwhile, across the nation a wave of urbanists began calling for the issues of these interstates to be addressed. They were noticing the way that, despite the interstate being developed as a means of bringing cities together, in many instances they tore cities apart. As this issue began to pick up steam, one city aimed to capitalize on this momentum. It could be considered the catalyzing moment of the burying highways movement. Freeway Park in Seattle, Washington.

Freeway Park was designed by Lawrence Halprin and was commissioned by the city of Seattle in 1970. While the city was looking for developement adjacent to it's



interstate 5, Halprin made the recommendation that in addition to using the adjacent property, the space over the interstate be used as well. This had many benefits. Notably that the land over the interstate was covered in aerial space rights and that it would allow for the creation of a valuable piece of property without having to actually purchase any land. Additionally, the connection made by the park and the increase in surrounding land values promised to improve conditions in the surrounding neighborhood. The project was completed, and was a great success. One so great that it set off a whole movement of similar projects, one which is still picking up steam today.

Projects of this nature are often times incredibly expensive, but those who have studied the effects of them say that they pay themselves off. Harnik states “In Trenton, the New Jersey Department of Transportation spent $150 million on the new 6.5-acre Riverwalk deck over U.S. 29, linking the city to the Delaware River. In response, notes Trenton Planning Director Andrew Carten, ‘The project resulted in a significant spike in interest and the sale prices of property. After all, would you rather look over 600 trucks barreling past every day, or a scenic park and river?’ One lot, worth $120,000 preconstruction, was developed with six housing units that sold for $200,000 each. The presence of the park also helped recruit a new 82-unit market rate residential building.” Due to this, projects of this nature have

been taking place across the country. Projects have been completed in Los Angeles, Trenton, Boston, and many more. There are also many future projects in the works stretching from San Diego to Dallas to St. Louis. It all points to people placing higher value on their communities and the things they want to see in them.

Shifting gears back to Duluth, lots of things have changed since the Interstate was built. The city has been experiencing an economic transition. While the economy of 1970's Duluth was primarily related to the shipping of iron ore, and the businesses associated with them, the iron ore industry has weakened significantly since those days. The effect of Duluth's lesser industrial economy played a huge role in opening up space along the city's lakefront, notably in Canal Park. Today, Canal Park is the top tourist destination in the city. What was once a bunch of slums and warehouses is now home to shops, restaurants, hotels, and many other amenities. Additionally, the transitioning of Duluth's economy towards tourism and hospitality has left a fair number of the buildings downtown empty and neglected. Major changes have taken place, and the infrastructure has not kept up.

As far as the methodological research goes, the history is not nearly as extensive. Data mining has been known by those in the business and marketing fields for a fair amount of time, but it's use in the design fields, especially landscape architecture, has been minimal. Why is this? The predominant reason is that there have been no methods developed by which to effectively catalogue, analyze, and make decisions based off of this information.

Instagram, the primary tool being used to obtain information in this thesis, was launched a mere 8 years ago in 2010. Since that day, the platform has grown to over 800 million users, and the growth curve is on an exponential path. Imagine that. 800 million users posting photos - each photo is worth a thousand words - and then consider how we currently obtain words from people.

One of the most common methods of obtaining data about user preference is via survey. Surveys are great tools for reaching an audience, but they come with many problems. For example, consider the following issues:

- surveys exclude busy people from their sample size due to their timely nature
- surveys can be expensive
- people often lie on surveys
- surveys do not measure raw impressions
- it can be hard to reach desired target

With the previous issues noted, I think that the method being explored here has the potential to be a strong replacement for surveys and other user preference gathering methods. Instagram allows people to post things in the moment with minimal mental processing. This creates a much rawer impression of a place than a survey might. Additionally, in this method, the answers to our questions are already there, we just have to come up with them. In a survey it is the other way around, and this can limit the amount of information we can obtain. Additionally, we can take these answers and see how they vary depending on location, time of day, date, and many other variables. Just visualizing these changes alone makes this method far more useful than the traditional survey.


FREEWAY
PARK
STOP
HERE ON
RED

12 Site Analysis

The site of my thesis project presents a very exciting challenge in terms of how things will need to be layed out. It occurs in a fairly dense urban realm and will need to address many different items in its final stage. Some of these problems have obvious solutions, but many will need to be carefully assessed and analyzed in order to come up with a solution that addresses all the pertinent issues.

To start, the topography of the land is very intriguing. The land slopes steeply downward as we move from northwest to southeast across downtown into the Lake Superior Basin where it then levels off quite quickly. The sudden leveling is due to the terraforming of the Duluth Harbor and the associated shipping piers and slips. This places the downtown neighborhood on a steep grade and the Canal Park neighborhood on a flat plane.

As far as the geology of the land goes, much of Duluth, including this area, is built on ledgerock; a difficult to penetrate basalt based stone. This means that excavation and foundation building will add significant levels of cost to any project which requires such means.

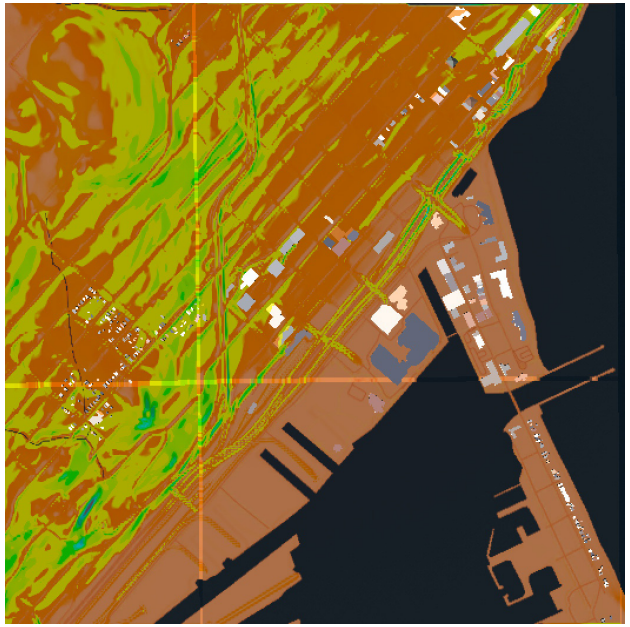
The climatology of the site is somewhat different from sites within relatively close proximity due to the effects of Lake Superior. The lake acts as a mediator of temperature along its shore, but the areas at the top of the slopes mentioned previously are not nearly as affected as those along the lake. This results in large differences in weather between a matter of city blocks in some instances. My site, lying in the lower portion of the city, benefits from the more mediated temperatures the lake provides. Summers are often up to 20 degrees cooler and winters 20 degrees warmer than surrounding areas. This effect also causes a notable increase in precipitation. It is important that the final design is capable of handling these conditions. Winds out of the northwest are most typical. The site is shielded from such winds due to its geographic nature. However, the city is especially vulnerable to winds which come out of the southeast. These winds have nothing to stop them as they come from across Lake Superior. Often times, these winds are rather frigid, and their occurrence is referred to by locals as “turning the AC on”.

As far as plant material goes, my site finds itself lying in the Laurentian mixed forest biome in hardiness zone 4b. The hardiness zone again is much higher than surrounding areas due to the mediating effect of the lake. Common tree genus native to the area include Birch, Aspen, Pine, and Spruce, though much of the native forests have been long removed by the logging industry and further urbanization. The color pallete of vegetation in this area includes white, deep green, blue-green, yellow, and red.

At present, the site is host to many humans, most of them driving. As mentioned, the site is along Interstate 35, so this is expected. Additionally, the site contains several other streets with heavy pedestrian activity, though no stopping point lie within the site at present. The North Shore Scenic Railroad also operates a line which subtends the site, so occasional trains pass through as well.

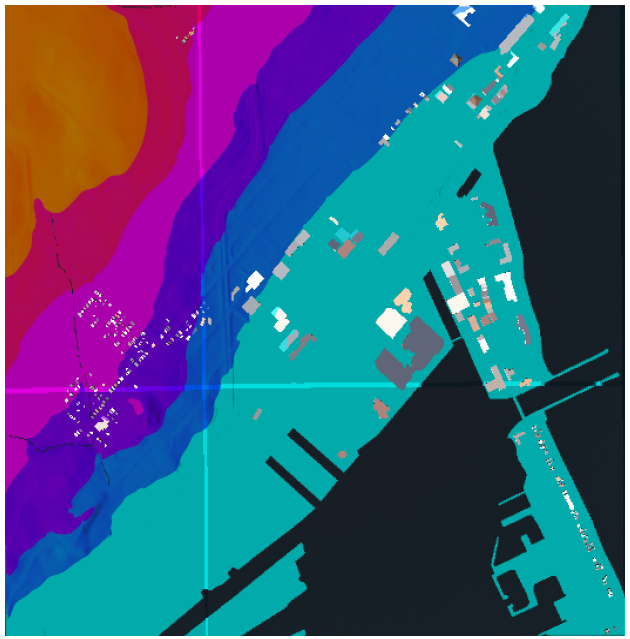
Site soils are described as the following:
Udorthents and similar soils: 35 percent
Urban land: 35 percent
Aquents and similar soils: 30 percent

As far as site character goes, the site is predominantly paved surface at present. This includes the interstate and the surrounding streets. The railroad provides ballast, wood, and rail to the site mix. Nothing too exciting. However, as mentioned previous to this section, there is ample room to develop the aerial space above this site and fill it with more exciting surfaces.



slope analysis

terrain analysis



WALKABILITY
(FROM CANAL PARK)

POOR — GREAT

- source point for study

DEAD ZONE

INTERVENTION AREA

POINTS OF INTEREST

1. DULUTH SHIP CANAL
2. AERIAL LIFT BRIDGE
3. NORTH PIER LIGHTHOUSE
4. PARK POINT BEACH
5. DEWITT SEITZ MARKETPLACE
6. LAKEWALK
7. UNCLE HARVEY'S MAUSOLEUM
8. WILLIAM A. IRVIN SHIP MUSEUM
10. GREAT LAKES AQUARIUM
11. BAYFRONT FESTIVAL PARK
12. HIGGINS OVERLOOK
13. NORTH SHORE SCENIC RAILROAD
14. HISTORIC DOWNTOWN
15. FON-DU-LUTH CASINO
16. LAKE PLACE PARK
17. FITGERS COMPLEX
18. SKYLINE PARKWAY


CASCADE PARK
CENTRAL HILLSIDE PARK
LAKE PLACE PARK
DOWNTOWN
CANAL PARK
BAYFRONT FESTIVAL PARK
LAKE SUPERIOR
DULUTH HARBOR
SHIP CANAL
CANAL PARK
35
23
5TH STREET
4TH STREET
3RD STREET
2ND STREET
1ST STREET
SUPERIOR STREET
MICHIGAN STREET
RAILROAD STREET
1ST AVENUE E
2ND AVENUE E
3RD AVENUE E
LAKE AVENUE
CANAL PARK DRIVE
HARBOR DRIVE
INTERSTATE 35
MESABA AVENUE
1ST AVENUE W
2ND AVENUE W
3RD AVENUE W
4TH AVENUE W
5TH AVENUE W

13 Performance Criteria

In order to ensure that this project is a successful project, some performance criteria ought to be set. The performance criteria for this project are as follows:

- Improve walkablility between Canal Park and Downtown
- Improve bikeability between Canal Park and Downtown
- Increase land values within area surrounding project site
- Improve percentage of green space in surrounding area
- Reduce accidents involving pedestrians, bikes, and automobiles
- Process site stormwater on site
- Develop successful method of using Instagram photos to create cognitive landscape
- Site should draw from Insta - gram photos for colors, forms, etc.
- Site should offer uses for 24/7 365 day use.
- Site should provide space for all sorts of users
- Site should promote sense of place in Duluth
- Site should create new crossing point over Interstate 35
- Costs of project should be offset by financial gains

14 Appendices

APPENDIX A: WORKS CITED

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APPENDIX B: PREVIOUS STUDIO EXPERIENCE

2nd year

Fall, Kathleen Pepple, Intro to Landscape Architecture
Spring, Dominic Fischer, Parks and Open Spaces

3rd year

Fall, Young Jae Kim, Site Detailing
Spring, Kathleen Pepple, Community Planning

4th year

Fall, Jay Kost, Urban Design
Spring, Matthew Chambers, Environmental Remediation

5th year

Fall, Dominic Fischer, Environmental Planning

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“You can’t use up creativity. The more you use, the more you have”

-Maya Angelou